

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): An ultrasound diagnostic apparatus for obtaining an ultrasound image of a subject into which an ultrasound contrast agent mainly composed of microbubbles is injected, comprising:

 a probe configured to transmit/receive an ultrasound wave to/from the subject;

 a transmission circuit configured to drive said probe to transmit an ultrasound wave while sequentially changing a direction of an ultrasound transmission line;

 a reception circuit configured to generate reception line data of the number of parallel reception from ultrasound echo signals obtained by one ultrasound wave transmission;

 a transmission/reception control circuit configured to control said transmission and reception circuits to change the number of parallel reception during a scan sequence for generating a 1-frame ultrasound image; and

 an image processing unit configured to generate an ultrasound image on the basis of the reception line data.

Claim 2 (Original): An apparatus according to claim 1, wherein when generating one ultrasound image, said an image processing unit uses N adjacent reception line data generated from ultrasound echo signals obtained by one ultrasound transmission, centering around a transmission direction, in a short-distance region, and uses n ($n < N$) adjacent reception line data generated from ultrasound echo signals obtained by one ultrasound transmission, centering around a transmission direction, in a long-distance region.

Claim 3 (Original): An apparatus according to claim 1, wherein said transmission/reception control circuit changes the number of parallel reception in a first partial region and a second partial region, and
said transmission circuit sets an ultrasound focus point in a long-distance region when transmitting an ultrasound wave to the first partial region and when transmitting an ultrasound wave to the second partial region.

Claim 4 (Original): An apparatus according to claim 1, wherein said an image processing unit generates an ultrasound image on the basis of a harmonic component obtained by removing a fundamental wave component from the ultrasound echo signal.

Claim 5 (Original): An apparatus according to claim 1, wherein said transmission/reception control circuit changes the number of parallel transmission/reception to not less than three different numbers within one frame.

Claim 6 (Canceled).

Claim 7 (Currently Amended): An ultrasound diagnostic apparatus for obtaining an ultrasound image of a subject into which an ultrasound contrast agent mainly composed of microbubbles is injected, comprising:

a probe configured to transmit/receive an ultrasound wave to/from the subject;
a transmission circuit configured to drive said probe to transmit an ultrasound wave while sequentially changing a direction of an ultrasound transmission line and drive said probe such that the ultrasound transmission lines are formed into a plurality of sets each constituted by a plurality of adjacent transmission lines, scanning is performed with respect to

the plurality of sets in a forward direction, and scanning is performed in a reverse direction in each of the sets, and the transmission circuit sequentially switches a focus point position of an ultrasound wave to be transmitted in a scan sequence for obtaining a 1-frame ultrasound image at a long distance and short distance;

a reception circuit configured to generate reception line data from an ultrasound echo signal obtained by the ultrasound transmission; and

an image processing unit configured to generate an ultrasound image on the basis of the reception line data.

Claim 8 (Canceled).

Claim 9 (Original): An ultrasound diagnostic apparatus for obtaining an ultrasound image of a subject into which an ultrasound contrast agent mainly composed of microbubbles is injected, comprising:

a probe configured to transmit/receive an ultrasound wave to/from the subject;

a transmission circuit configured to drive said probe to transmit an ultrasound wave while sequentially changing a direction of an ultrasound transmission line;

a reception circuit configured to generate reception line data from ultrasound echo signals obtained by transmission of the ultrasound wave; and

a transmission/reception control circuit configured to control said transmission and reception circuits to scan a plurality of local regions within a scan slice in different transmission conditions.

Claim 10 (Original): An apparatus according to claim 9, wherein said transmission/reception control circuit performs transmission in different transmission

conditions in the respective local regions so as to correct a difference in collapse degree of the bubbles due to an influence of a tissue distribution in the object.

Claim 11 (Original): An apparatus according to claim 9, wherein said transmission control circuit changes at least one of a driving voltage for a transducer, a size of a focus point, an opening area, the number of elements driven by an ultrasound transducer, and an ultrasound transmission frequency.

Claim 12 (Original): An apparatus according to claim 9, wherein said transmission/reception control circuit respectively sets transmission conditions for the plurality of local regions so as to make transmission sound pressures constant with respect to the plurality of local regions.

Claim 13 (Original): An apparatus according to claim 9, further comprising a storage unit storing a plurality of patterns of templates indicating a shape in which the slice is segmented into local regions and transmission conditions in the respective local regions.

Claim 14 (Original): An apparatus according to claim 9, further comprising an input device configured to segment the slice into a plurality of local regions.

Claim 15 (Original): An apparatus according to claim 9, wherein said transmission/reception control circuit comprises an input device for manually designating at least one representative point within the slice, and means for obtaining a segmentation shape of the slice in accordance with the designated representative point.

Claim 16 (Original): An apparatus according to claim 9, wherein said an image processing unit generates a mosaic image on the basis of a reception signal intensity obtained for each of the local regions.

Claim 17 (Original): An apparatus according to claim 16, wherein the mosaic image is painted in colors corresponding to the reception signal intensities for the respective local regions.

Claim 18 (Original): An apparatus according to claim 16, wherein numerical values or characters corresponding to the reception signal intensities in the respective local regions are written in the mosaic image.

Claim 19 (Withdrawn): An ultrasound diagnostic apparatus for obtaining an ultrasound image of a subject into which an ultrasound contrast agent mainly composed of microbubbles is injected, comprising:

a probe configured to transmit/receive an ultrasound wave to/from the subject;
a transmission circuit configured to transmit an ultrasound wave to form a period during which a contrast agent flows into the object and a period during which microbubbles are collapsed by an ultrasound wave and driving said probe to perform ultrasound transmission so as to obtain ultrasound echo data corresponding to a plurality of frames in the microbubble collapse period; and

an image generating unit configured to generate images of the plurality of frames on the basis of ultrasound echo signals received by said probe and a combined image by combining the plural images.

Claim 20 (Withdrawn): An apparatus according to claim 19, wherein said image generating unit compares luminance values at the same coordinates of the images of the plurality of frames, and sets a maximum luminance value as a luminance value of the combined image.

Claim 21 (Withdrawn): An apparatus according to claim 19, further comprising a display unit for displaying the combined image in real time, together with the image of each frame.

Claim 22 (Withdrawn): An ultrasound diagnostic apparatus for obtaining an ultrasound image of a subject into which an ultrasound contrast agent mainly composed of microbubbles is injected, comprising:

- a probe configured to transmit/receive an ultrasound wave to/from the subject;
- a transmission circuit configured to transmit an ultrasound wave to form a period during which a contrast agent flows into the object and a period during which microbubbles are collapsed by an ultrasound wave and driving said probe to perform ultrasound transmission on a single scanning line a plurality of number of times;
- a reception circuit configured to generate reception line data from an ultrasound echo signal obtained by transmission of the ultrasound wave; and
- an image generating unit configured to generate an image by combining portions of the reception line data on the single scanning line.

Claim 23 (Original): A scanning method for an ultrasound diagnostic apparatus for obtaining an ultrasound image of a subject into which an ultrasound contrast agent mainly composed of microbubbles is injected, comprising the steps of:

performing first ultrasound transmission to sequentially transmit ultrasound waves while sequentially changing a direction of an ultrasound transmission line;

performing second ultrasound transmission to transmit an ultrasound wave to a line between ultrasound transmission lines in the first ultrasound transmission;

performing first reception to generate reception line data of a plurality of reception scanning lines from ultrasound echo signals obtained by performing the first ultrasound transmission once;

performing second reception to generate reception line data of reception scanning lines different in number from that in the step of performing the first reception from ultrasound echo signals obtained by performing the second ultrasound transmission once; and

generating one ultrasound image by combining the reception line data obtained in the step of performing the first and second receptions.

Claim 24 (Canceled).

Claim 25 (Currently Amended): A scanning method for an ultrasound diagnostic apparatus for obtaining an ultrasound image of a subject into which an ultrasound contrast medium mainly composed of microbubbles is injected, comprising the steps of:

transmitting ultrasound waves such that the ultrasound transmission lines are formed into a plurality of sets each constituted by a plurality of adjacent transmission lines, scanning is performed with respect to the plurality of sets in a forward direction, and scanning is performed in a reverse direction in each of the sets;

sequentially switching a focus point position of an ultrasound wave to be transmitted in a scan sequence for obtaining a 1-frame ultrasound image at a long distance and short distance;

generating reception line data from an ultrasound echo signal obtained by the ultrasound transmission; and

generating an ultrasound image on the basis of the reception line data.

Claim 26 (Withdrawn): A scanning method for an ultrasound diagnostic apparatus for obtaining an ultrasound image of a subject into which an ultrasound contrast medium mainly composed of microbubbles is injected, comprising the steps of transmitting/receiving an ultrasound wave in different transmission conditions in local regions so as to correct a difference in collapse degree of the bubbles due to an influence of a tissue distribution in the object; and

generating an ultrasound image on the basis of an ultrasound echo obtained by the ultrasound transmission.

Claim 27 (Withdrawn): A scanning method for an ultrasound diagnostic apparatus for obtaining an ultrasound image of a subject into which an ultrasound contrast medium mainly composed of microbubbles is injected, comprising the steps of:

transmitting/receiving an ultrasound wave to form a period during which a contrast medium flows into the object and a period during which microbubbles are collapsed by an ultrasound wave, and performing the ultrasound transmission/reception corresponding to a plurality of frames in the microbubble collapse period; and

generating images of the plurality of frames on the basis of ultrasound echo signals obtained by the transmission/reception, and generating a combined image by combining the respective images.

Claim 28 (Withdrawn): A scanning method for an ultrasound diagnostic apparatus for obtaining an ultrasound image of a subject into which an ultrasound contrast medium mainly composed of microbubbles is injected, comprising the steps of:

transmitting/receiving an ultrasound wave to form a period during which a contrast medium flows into the object and a period during which microbubbles are collapsed by an ultrasound wave and performing ultrasound transmission/reception on a single scanning line a plurality of number of times;

generating reception line data from an ultrasound echo signal obtained by the transmission/reception; and

generating an image by combining portions of the reception line data on the single scanning line.